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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Eric John Hewitt

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09/01/2006

HAVERSTOCK & OWENS LLP
162 NORTH WOLFE ROAD
SUNNYVALE, CA 94086

EXAMINER

TORRES, JOSEPH D

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 09/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/808,884	Applicant(s) HEWITT ET AL.	
	Examiner Joseph D. Torres	Art Unit 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 23-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 1-10 and 23-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/03/2005.

This application contains claims 1-10 and 23-40 drawn to an invention nonelected with traverse in the response filed 10/03/2005. A complete reply to a final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

Response to Arguments

2. Applicant's arguments filed 06/29/2006 have been fully considered but they are not persuasive.

The Examiner introduces the Examiner's Response with a recap of the previous rejection of claim 11 introducing new arguments to address newly amended language in claim 11 as well as Applicant's arguments in the remark section of the Amendment filed 06/29/2006.

Glover teaches receiving a row of the block and immediately outputting the row and encoding the information bits in the row, wherein a first set of encoded data is

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generated according to a first encoding scheme (col. 4, lines 9-12 in Glover teach that first row encoding is performed on a 30x30 array according to a first Reed-Solomon encoding scheme to produce a 30x32 row encoded array having two additional columns of redundant data; Note: performing Reed-Solomon encoding on rows clearly suggests a first Reed-Solomon encoder for receiving and encoding the rows of a 30x30 information array and outputting a 30x32 row encoded array having two additional columns of redundant data for subsequent processing); outputting the first set of encoded data (col. 4, lines 12-14 in Glover clearly suggest that the 30x32 row encoded array having two additional columns of redundant data is output from a first Reed-Solomon encoding scheme to a second Reed-Solomon encoding scheme); encoding the information bits in a column according to a second encoding scheme, wherein a second set of encoded data is generated and iteratively updated according to the information bits in the row (col. 4, lines 12-14 in Glover clearly suggest that the 30x32 row encoded array having two additional columns of redundant data is column encoded according to a second Reed-Solomon encoding scheme to produce 32x32 column-encoded row encoded array having two additional rows; Note: col. 4, line 14 in Glover teaches that the same process for row and column encoding an array is performed for 30 30x30 information array blocks to produce 30 32x32 which clearly suggest the iterative use of the row and column encoding to produce a 3-dimensional block comprising 30 32x32 row and column encoded arrays); encoding the information bits in the block according to a parity type encoding scheme, wherein a set of encoded data is generated according to: the information bits in the row, the information bits in the

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column, the first set of encoded data, and the second sets of encoded data (col. 4, lines 14-17 in Glover teach that the 3-dimensional block comprising 30 32x32 row and column encoded arrays each having two additional columns and two additional rows of redundant data is subjected to a third Reed-Solomon parity encoding to produce a 32x32x32 encoded block whereby every information bit in every row, every information bit in every column, each of the first set of row encoded columns from the first Reed-Solomon encoding scheme and each of the second set of column encoded rows from the second Reed-Solomon encoding scheme is subjected to the third Reed-Solomon parity encoding scheme); outputting the second set of encoded data after all the information bits and all subsequent first sets of encoded data are outputted (col. 4, lines 12-14 in Glover clearly suggest that the 32x32 column-encoded row encoded array having a second set of encoded data comprising two additional rows is output after the 30x32 row encoded array having two additional columns of redundant data is outputted since the second encoding scheme requires the 30x32 row encoded array having two additional columns of redundant data); and outputting the 3D block of encoded data (Figure 1a in Glover teaches that the 3D block of encoded data is output to be recorded on a disc).

Glover teaches all aspects of claim 11 in the order required by claim 11 for producing a 3D encoded block of data using an outer encoding scheme (first Reed Solomon encoding scheme), middle encoding scheme (second Reed Solomon encoding scheme) and an inner encoding scheme (third Reed Solomon parity encoding scheme).

However Glover does not explicitly teach the specific use of hyper-diagonally encoding.

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Rhines, in an analogous art, teaches use of hyper-diagonally encoding (Figure 4A, 4B and 5 teach hyper-diagonally encoding whereby hyper-diagonal encoding is performed by rotating a 3D block of data prior to encoding; Note: Rhines refers to rotating as orthogonal shuffling in the Abstract in Rhines; Note also, even the Applicant in the Applicant's abstract admits that rotating a block is a preferred embodiment for encoding hyper diagonals in a 3D block).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Glover with the teachings of Rhines by including use of hyper-diagonally encoding. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of hyper-diagonally encoding would have provided protection against burst errors (Abstract, Rhines Note: Rhines refers to rotating as orthogonal shuffling in the Abstract in Rhines).

The Applicant contends, "neither Glover nor Rhines disclose, teach, or even suggest hyper-diagonally encoding information bits in a block according to a parity type encoding scheme, thereby generating a hyper set of encoded data according to the information bits in the row, the information bits in the column, the first set of encoded data, and the second set of encoded data, as particularly recited in element "e" of claim 11".

The Examiner disagrees and asserts col. 4, lines 14-17 in Glover teach that the 3-dimensional block comprising 30 32x32 row and column encoded arrays each having

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two additional columns and two additional rows of redundant data in Figure 1a of Glover is subjected to a third Reed-Solomon parity encoding to produce a 32x32x32 encoded block whereby every information bit in every row, every information bit in every column, each of the first set of row encoded columns from the first Reed-Solomon encoding scheme and each of the second set of column encoded rows from the second Reed-Solomon encoding scheme is subjected to the third Reed-Solomon parity encoding scheme.

Glover teaches all aspects of claim 11 in the order required by claim 11 for producing a 3D encoded block of data using an outer encoding scheme (first Reed Solomon encoding scheme), middle encoding scheme (second Reed Solomon encoding scheme) and an inner encoding scheme (third Reed Solomon parity encoding scheme).

Rhines, in an analogous art, teaches use of hyper-diagonally encoding (Figure 4A, 4B and 5 teach hyper-diagonally encoding whereby hyper-diagonal encoding is performed by rotating a 3D block of data prior to encoding; Note: Rhines refers to rotating as orthogonal shuffling in the Abstract in Rhines: Note also, even the Applicant in the Applicant's abstract admits that rotating a block is a preferred embodiment for encoding hyper diagonals in a 3D block).

The Applicant contends, "claim 11 recites (in steps a, b, c, d, e, f, and g) a sequence of steps that include receiving, encoding, and outputting encoded data. In contrast, Glover, Rhines, and the combination of Glover and Rhines do not disclose, teach, or even suggest such particular sequence recited in claim 11".

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The Examiner disagrees and asserts that both Glover and Rhines teach 3D encoding of block data using an outer encoding scheme (first Reed Solomon encoding scheme), middle encoding scheme (second Reed Solomon encoding scheme) and an inner encoding scheme (third Reed Solomon parity encoding scheme) that require that operations be carried out in the precise order recited in claim 11 since an inner encoder requires the output of the middle encoder and the middle encoder requires the output of the outer encoder, that is, the encoding taught in Glover and Rhines cannot deviate from the order recited in claim 11.

The Examiner disagrees with the applicant and maintains all rejections of claims 11-22. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 11-22 are not patentably distinct or non-obvious over the prior art of record in view of the references, Glover; Neal et al. (US 4564945 A, hereafter referred to as Glover) in view of Rhines; Don S. et al. (US 5392299 A, hereafter referred to as Rhines) as applied in the last office action, filed 12/19/2005. Therefore, the rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 11-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Glover; Neal et al. (US 4564945 A, hereafter referred to as Glover) in view of Rhines; Don S. et al. (US 5392299 A, hereafter referred to as Rhines).

See the Non-Final Action filed 12/19/2005 for detailed action of prior rejections.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JOSEPH TORRES
PRIMARY EXAMINER

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2133